VITERBI DECODER WITH SURVIVOR BITS STORED TO SUPPORT LOOK-AHEAD ADDRESSING

Cross- References To Related Applications

[01]   The present application is related to commonly assigned U.S. Patent
,now U.S. Patent No. 7,197,686,
Application Serial Number 10/683,563 entitled "RECONFIGURABLE BIT-
^
MANIPULATION NODE" filed on October 10, 2003, the disclosure of which is

hereby incorporated by reference in its entirety for all purposes.

Background Of The Invention

[02]   The present invention generally relates to a method for decoding

convolutional codes and, more specifically, to a system and method for decoding

convolutional error correcting codes using a maximum-likelihood decoding

algorithm.

[03]   Error correcting codes are well known. Early codes included parity codes

and block codes where syndromes are generated to help determine whether the

received data stream at a receiving device is the same as the data stream that was sent

by a transmitting device. Parity codes operate at the byte or word level while block

codes operate on relatively large (typically, up to a couple of hundred bytes) message

blocks. Recently, convolutional codes have enjoyed increasing popularity in both

magnetic recording applications and communication systems, such as optical, wireline

and wireless communication systems. In contrast to block codes, convolutional codes

operate on serial data, one or a few bits at a time. The Viterbi algorithm is a widely

used convolutional code algorithm and is of the type known as a maximum-likelihood

decoding algorithm.

[04]   In a typical system requiring forward error correction, the transmitting

device uses an encoder to encode a stream of data before transmission through the

channel in accordance with certain key parameters. Specifically, a constraint length

(denoted as 'k'), a code rate (denoted as r = 'number in' divided by 'number out') and